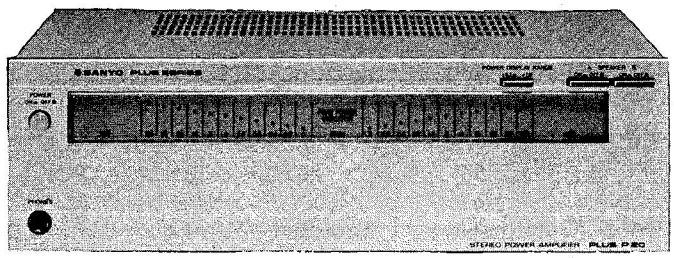
SERVICE MANUAL

STEREO POWER AMPLIFIER

SANYO

PLUS P20

(EUROPE)



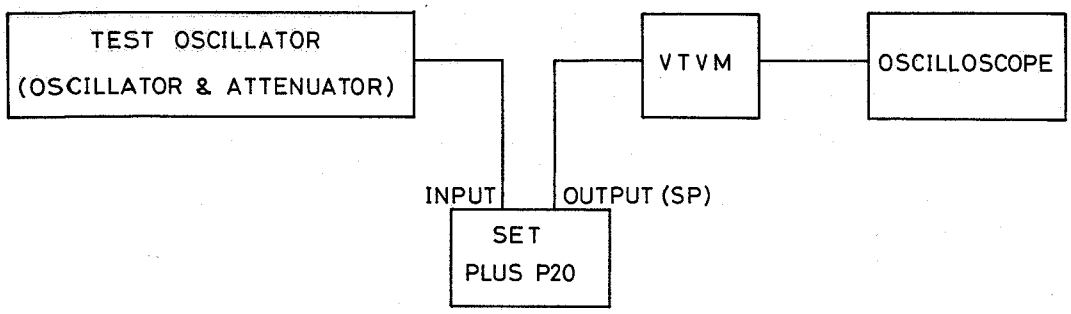
SPECIFICATIONS

Continuous power (at 4 ohms)	60 watts x 2 (1.0% distortion)
Distortion	0.09% (56 watts output, 4 ohms)
Input sensitivity and impedance	1V/47 kohms
Frequency response	40 Hz – 16 kHz (±0.5 dB) (20 watts output, 4 ohms)
Signal to noise ratio	90 dB
Power requirements	AC: 220 V, 50 Hz
Power consumption	290 W
Dimensions	Approx. 298 (W) x 230 (D) x 88 (H) mm (11-3/4" x 9-1/16" x 3-1/2")
Weight	Approx. 6 kg (14 lbs.)

* Specifications are subject to change without notice.

ALIGNMENT

Level adjustment of peak power indicator



1. Preparation

Load	Open
Oscillator	1 kHz
Power display range	OFF (x 1)
Speaker	A or B

2. Adjustment of reference level

Adjust the attenuator so that the output voltage of the output (SP) terminal becomes 15.5V.
At this time, turn SVR751 (L-ch) and SVR851 (R-ch) until the LEDs (D760, 860) of 60W begin to light up.
Turn the attenuator to damp the input by 0.2 dB; at this time, make sure the LEDs are put out.

3. Adjustment of offset

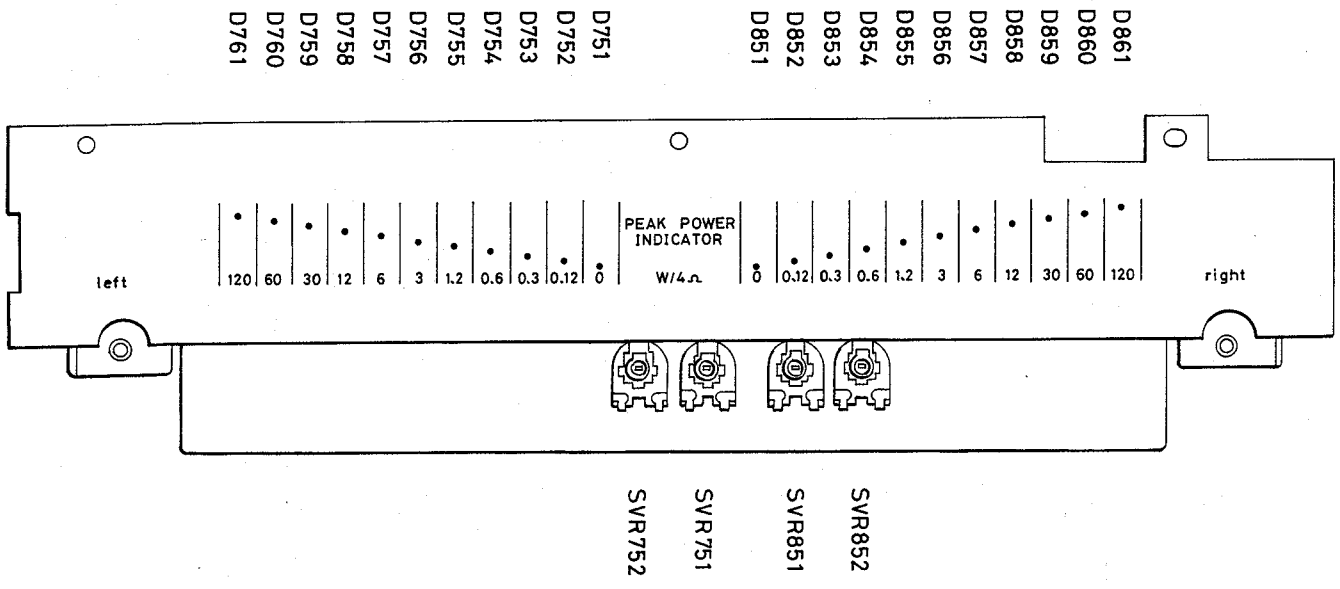
Adjust the attenuator so that the output voltage of the output (SP) terminal becomes 0.7V.
At this time, turn SVR752 (L-ch) and SVR852 (R-ch) until the LEDs (D752, 852) of 0.12W begin to light up.
Turn the attenuator to damp the input by 1 dB; at this time, make sure the LEDs are put out.

4. Checking of range selection

Adjust the attenuator so that the output voltage of the output (SP) terminal becomes 15.5V.
Damp the attenuator by 10 dB, and make sure the LEDs (D757, 857) of 6W light up. Then change the range switch to ON position (x 0.1), and make sure the LEDs (D760, 860) of 60W light up.
(Make sure the lighting level of the 60W LEDs (D760, 860) is within the range of 9.8 to 10.4 dB of the attenuator).

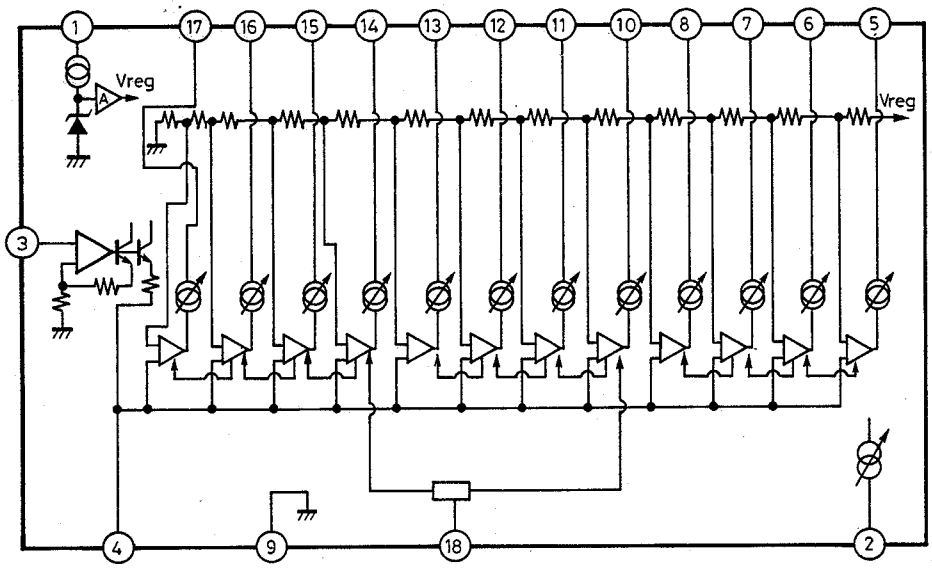
5. Checking of performance

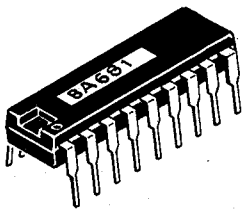
In the state of item 4 above, raise the attenuator by 3 dB, and make sure all the LEDs are lit.
Damp the attenuator by 28 dB, and make sure only the 0W LEDs (D751, 851) are lit.



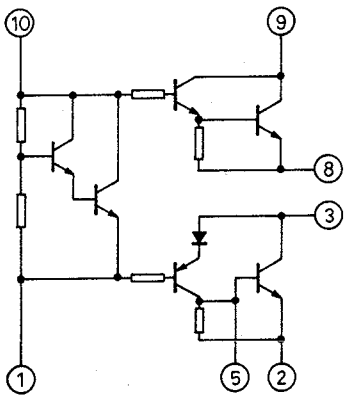
IC BLOCK DIAGRAM

BA681 (LED LEVEL METER DRIVER)

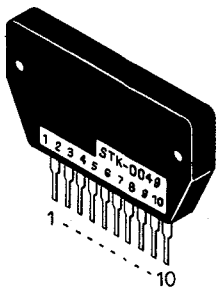




STK 0049

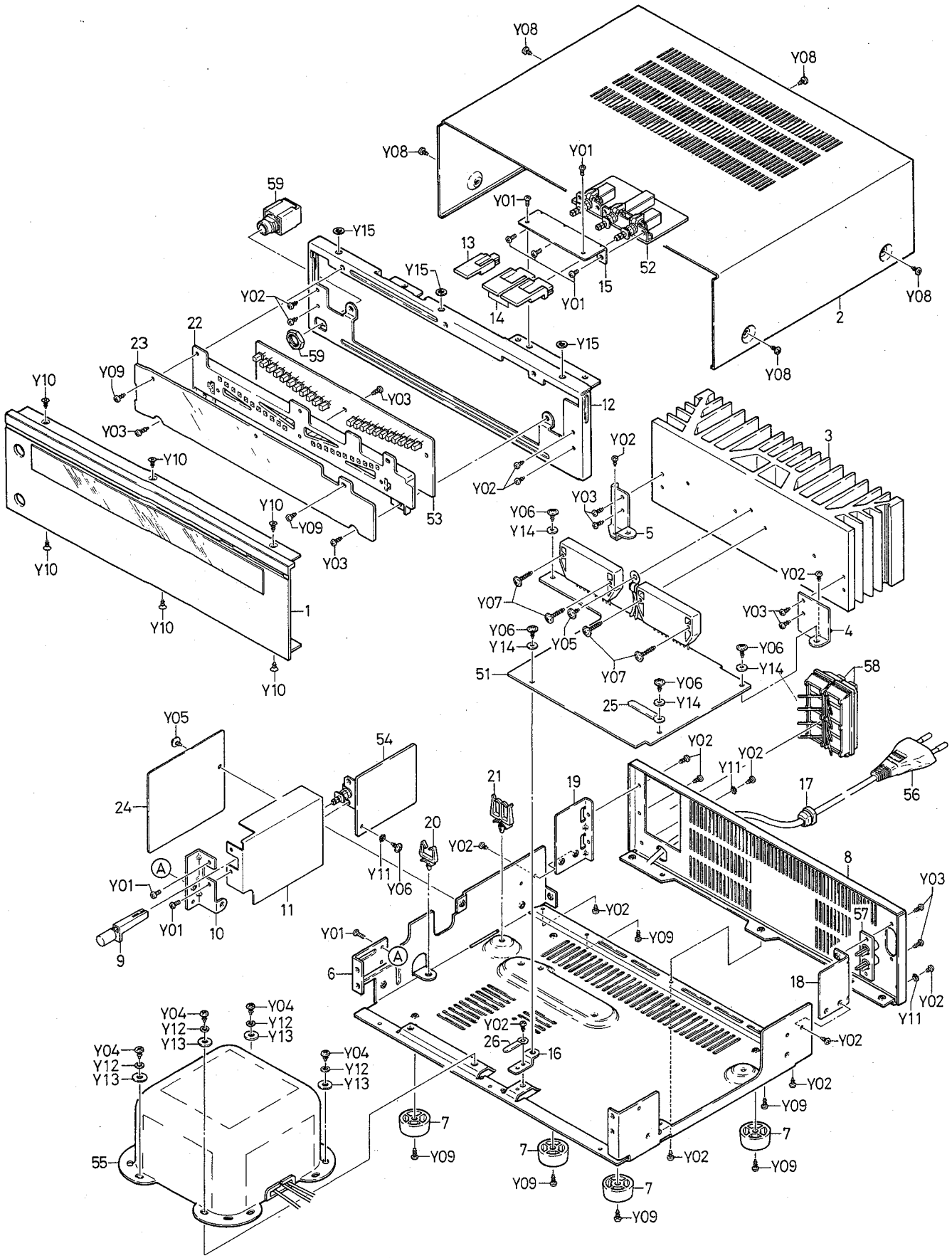


STK-0049



STK-0049

EXPLODED VIEW



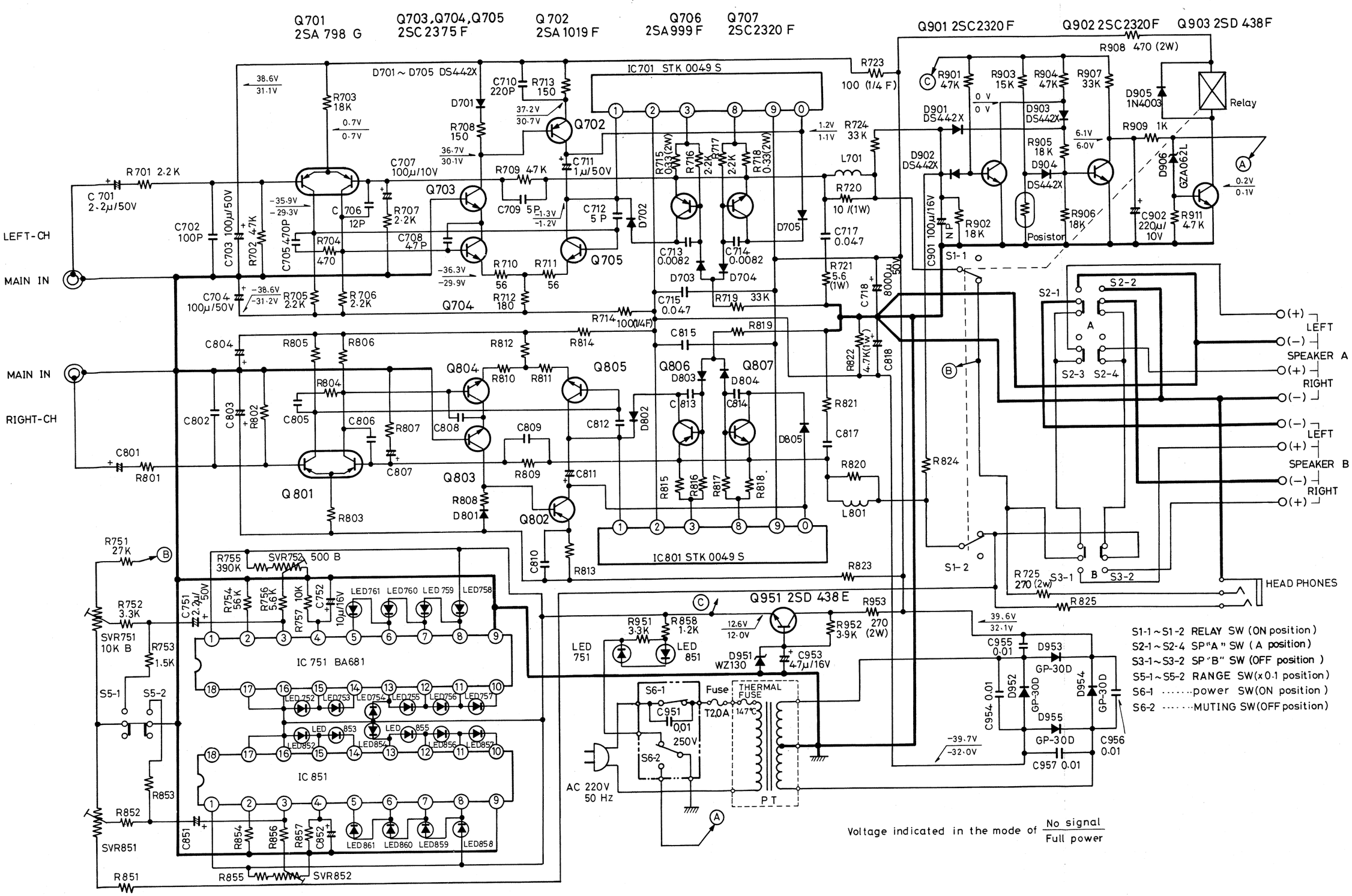
PARTS LIST

Key No.	Part No.	Description	Q'ty
PACKING			
	141-6-133T-13101	Individual Carton	1
	141-6-144T-62500	Foam Plastic Case	2
	141-6-317T-24900	Pad, Top	1
	141-6-231T-40500	Inner Polye Cover, Set	1
	141-6-231T-10300	Inner Polye Cover, AC Cord	1
ACCESSORY			
	141-6-410T-48800	Instruction Manual	1
	4-243T-13374	Lead Cord, RCA-RCA	1
CABINET & CHASSIS			
1	141-0-122T-35300	Front Panel Ass'y	1
2	141-2-111T-43401	Cabinet	1
3	141-2-368T-19400	Heat Sink	1
4	141-2-310T-37300	Bracket, Heat Sink	1
5	141-2-310T-37400	Bracket	1
6	141-2-125T-20200	Bottom Lid	1
7	141-2-174T-10600	Stand	4
8	141-2-126T-33301	Back Lid	1
9	141-0-161T-82100	Push Button Ass'y	1
10	141-2-365T-51500	Bracket, Power Switch	1
11	141-2-135T-67000	Cover, Power Switch	1
12	141-2-214T-05000	Bracket, Frame	1
13	141-2-161T-82900	Push Button, Display	1
14	141-2-161T-83000	Push Button, Speaker A,B	2
15	141-2-365T-53300	Bracket Switch	1
16	141-2-310T-37500	Bracket, PCB	1
17	141-2-464T-14400	Fixer	1
18	141-2-310T-37601	Bracket, Right	1
19	141-2-310T-44200	Bracket, Left	1
20	141-2-464T-29900	Fixer	1
21	141-2-464T-35600	Fixer	1
22	141-2-210T-24400	Bracket, LED	1
23	141-2-143T-83100	Marking Plate, LED	1
24	141-2-135T-68000	Cover	1
25	141-2-472T-01201	Lug	1
26	123-2-472R-00601	Lug	1
HARDWARE			
Y01		Pan Hd. Screw 3x6mm	8
Y02		Pan Hd. Tapping Screw 3x6mm	15
Y03		Pan Hd. Tapping Screw 3x8mm	9
Y04		Pan Hd. Tapping Screw 4x10mm	4
Y05		Pan Hd. Tapping Screw W/Washer 3x6mm	2
Y06		Pan Hd. Tapping Screw W/Washer 3x8mm	5
Y07		Pan Hd. Tapping Screw W/Washer 3x16mm	4
Y08		Bainding Hd. Tapping Screw 3x6mm	5
Y09		Bainding Hd. Tapping Screw 3x8mm	9
Y10		Flat Hd. Tapping Screw 3x6mm	6
Y11		Outer Tooth Lock Washer 3mm	3
Y12		Spring Washer 4mm	4
Y13		Washer 4mm	4
Y14	141-2-453T-01200	Washer 3x8x1mm	4
Y15	141-2-453T-02600	Washer 4x8x1mm	3
ELECTRICAL PARTS			
55	4-300T-12400	Power Trans	1
56	4-243T-83200	Power Cord	1
57	4-235T-61700	Socket, Input	1
58	4-237T-08400	Terminal Board, Speaker	2
59	4-235T-44871	Socket, Headphone	1

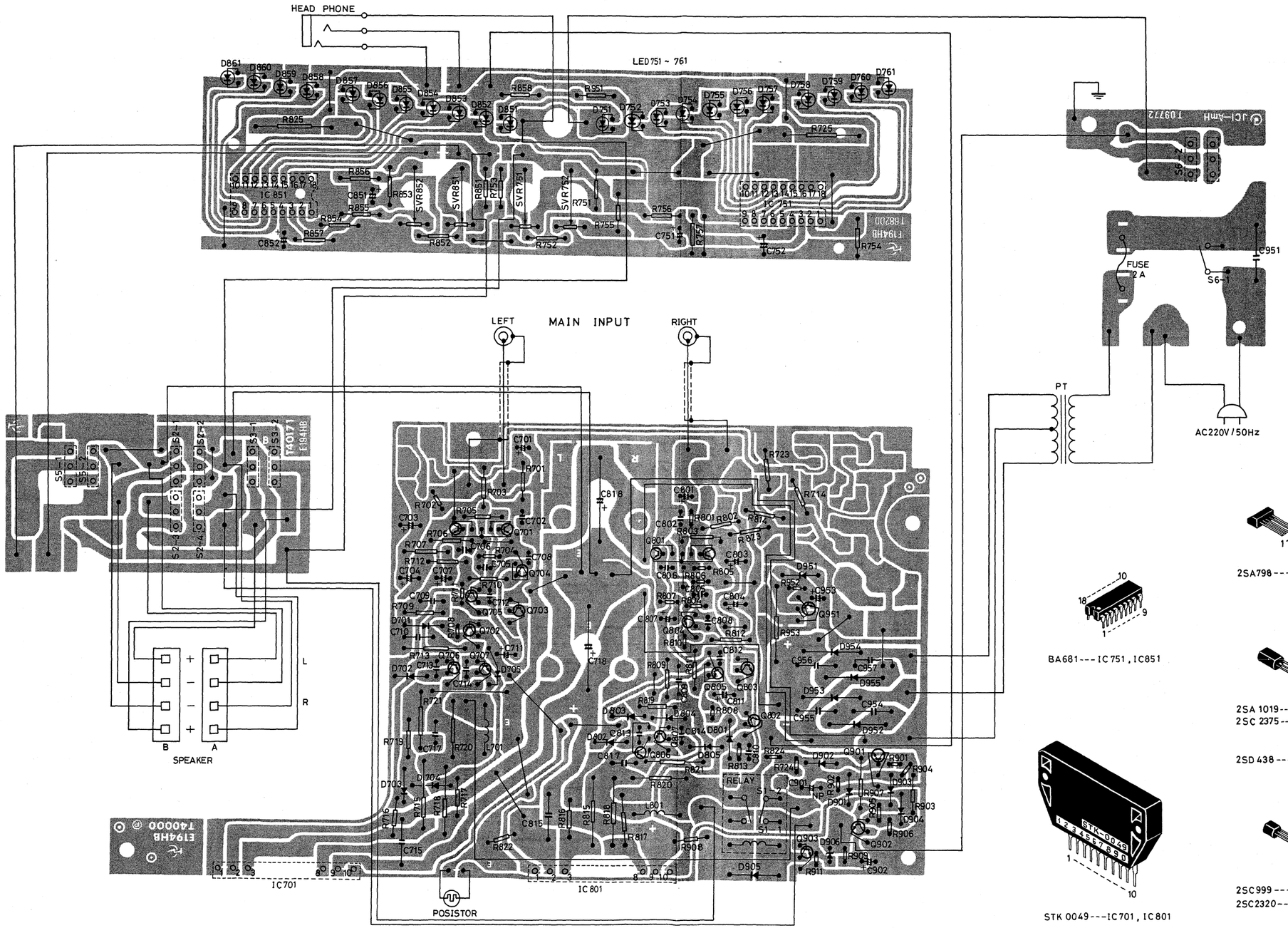
Key No.	Part No.	Description	Q'ty
MAIN AMP PCB ASS'Y			
51	141-4-233T-40000	P.C. Board Ass'y, Main Amp.	1
	4-232T-05300	Relay 24V	1
L701,801	4-265T-04830	V.H.F Coil	2
IC701,801		I.C STK-0049S	2
	4-209T-01172	Pozistor	1
Q702,802		Transistor 2SA1019	2
Q703,704		Transistor 2SC2375	6
705,803			
804,805			
Q707,807		Transistor 2SC2320	4
901,902			
Q706,806		Transistor 2SA999	2
Q951		Transistor 2SD438	1
Q701,801		Transistor 2SA798	2
Q903		Transistor 2SD438	1
D951		Zener Diode WZ130	1
D906		Zener Diode GZA6.2L	1
D905		Diode 1N4003	1
D701,702		Diode DS442X	14
703,704			
705,901			
801,802			
803,804			
805,902			
903,904			
D952,953		Diode GP30D	4
954,955			
	CAPACITORS		
C715,815	4-223T-06400	Capacitor 0.04μF 150V	2
C717,817		Mylar 0.047μF 50V ±20%	2
C713,813		Mylar 0.0082μF 50V ±20%	4
714,814			
C702,802		Ceramic 100pF 50V ±10%	2
C705,805		Ceramic 470pF 50V ±10%	2
C706,806		Ceramic 12pF 50V ±10%	2
C710,810		Ceramic 220pF 50V ±10%	2
C708,808		Ceramic 47pF 50V ±10%	2
C709,712		Ceramic 5pF 50V ±10%	4
809,812			
C954,955		Ceramic 0.01μF 500V +100—0%	4
956,957			
C718,818	4-163T-01973	Electrolytic 800μF	2
	4-163T-01972	) or 50V	
C703,803		Electrolytic 100μF 50V	4
704,804			
C701,801		Electrolytic 2.2μF 50V	2
C711,811		Electrolytic 1μF 50V	2
C707,807		Electrolytic 100μF 10V	2
C902		Electrolytic 220μF 10V	1
C953		Electrolytic 47μF 16V	1
C901		Electrolytic Nonpolar 100μF 16V	1
	RESISTORS		
R710,811		Carbon 56 ohms ±5% ¼W	2
R711,810		Carbon 56 ohm ±5% ¼W	2
R713		Carbon 150 ohm ±5% ¼W	1
R813,708		Carbon 150 ohm ±5% ¼W	3
808			
R712,812		Carbon 180 ohm ±5% ¼W	2
R704,804		Carbon 470 ohm ±5% ¼W	2
R909		Carbon 1K ohm ±5% ¼W	1
R801,805		Carbon 2.2K ohm ±5% ¼W	4
806,807			
R701,705		Carbon 2.2K ohm ±5% ¼W	6
706,707			
716,717			
R952		Carbon 3.9K ohm ±5% ¼W	1
R903		Carbon 15K ohm ±5% ¼W	1
R703,803		Carbon 18K ohm ±5% ¼W	2
R902,905		Carbon 18K ohm ±5% ¼W	3
906			
R719,819		Carbon 33K ohm ±5% ¼W	3
907			
R724,824		Carbon 33K ohm ±5% ¼W	2

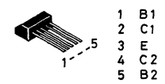
PARTS LIST

Key No.	Part No.	Description	Q'ty
MAIN AMP PCB ASS'Y			
	RESISTORS		
R702,901 904,911		Carbon 47K ohm ±5% ¼W	4
R802,809 709		Carbon 47K ohm ±5% ¼W	3
R816,817		Carbon 2.2K ohm ±5% ¼W	2
R723,823 714,814		FP-Carbon 100 ohm ±5% ¼W	4
R721,821		Metal 5.6 ohm ±5% 1W	2
R720,820		Metal 10 ohm ±5% 1W	2
R953		Metal 270 ohm ±5% 2W	1
R822		Metal 4.7K ohm ±5% 1W	1
R908		Metal 470 ohm ±5% 2W	1
R715,718 815,818		Metal 0.33 ohm ±5% 2W	4
SPEAKER SELECT PCB ASS'Y			
52	141-4-233T-40171	P.C. Baord Ass'y, Speaker Se Select	1
S2,3	4-238T-13100	Switch	1
S5	4-238T-02873	Switch	1
LED PCB ASS'Y			
53	141-4-233T-68200	P.C. Board Ass'y, LED	1
SVR751 851	4-222T-39475	Semifixed Variable Resistor 10K-B	2
SVR752 852	4-222T-39471	Semifixed Variable Resistor 500-B	2
IC751,851		IC BA681	2
LED751 851		LED SLP153B Red	2
		LED SLP153B Red	20
	CAPACITORS		
C751,851		Electrolytic 2.2μF 50V	2
C752,852		Electrolytic 10μF 16V	2
	RESISTORS		
R751,851		Carbon 27K ohm ±5% ¼W	2
R752,852 951		Carbon 3.3K ohm ±5% ¼W	3
R753,853		Carbon 1.5K ohm ±5% ¼W	2
R755,855		Carbon 390K ohm ±5% ¼W	2
R754,854		Carbon 56K ohm ±5% ¼W	2
R756,856		Carbon 5.6K ohm ±5% ¼W	2
R757,857		Carbon 10K ohm ±5% ¼W	2
R858		Carbon 1.2K ohm ±5% ¼W	1
POWER SUPPLY PCB ASS'Y			
54	141-4-233T-09772	P.C. Board Ass'y, Power Supply	1
S6~1,2	4-238T-07973	Push Switch	1
	4-234T-03671	Fuse 2A	1
	141-2-381T-04200	Bracket, Fuse	2
	141-6-476T-13200	Indication Label, Fuse	1
C951	4-223T-11700	Capacitor 0.01μF 250V	1


Q701 2SA 798 G
Q703,Q704,Q705 2SC 2375 F
Q702 2SA 1019 F
Q706 2SA 999 F
Q707 2SC 2320 F
Q901 2SC2320 F
Q902 2SC2320F
Q903 2SD 438F
D701 ~ D705 DS442X
IC701 STK 0049 S
IC801 STK 0049 S
R908 470 (2W)
R723 100 (1/4 F)
R724 33 K
L701
R720 10 Ω(1W)
C717 0.047
R721 5.6 (1W)
C718 8000μ 50V
R722 4.7K(1W)
C818
R819
R821
C817
R820
L801
R824
R823
R825
R953
R952 270 (2W) 3.9K
R901 47K
R903 15K
R904 47K
R907 33K
D905 1N4003
Relay
D901 DS442X
D903 DS442X
R905 18K
D904 DS442X
Posistor
R906 18K
R909 1K
D906
GZA062L
D902 DS442X
R902 18K
C902 220μ/ 10V
R911 4.7K
C901 100μ/16V
R710 56
R711 56
R712 180
R714 100(1/4F)
R715 0.33(2W)
R716 2.2K
R717 2.2K
R718 0.33(2W)
C713 0.0082
C714 0.0082
D703
D704
C715 0.047
R719 33K
D705
D702
C712 5 P
C711 1μ/50V
C710 220P
R713 150
R708 150
R709 47K
C709 5P
C707 100μ/10V
C706 12P
R707 2.2K
C708 47P
R704 470
C705 470P
C703 100μ/50V
R702 4.7K
C702 100P
C701 2.2μ/50V
R701 2.2K
R703 18K
D701
Q702
Q703
Q704
Q705
LEFT-CH
MAIN IN
RIGHT-CH
MAIN IN
C704 100μ/50V
R705 2.2K
R706 2.2K
C804
R805
R806
R812
R814
C815
R819
Q804
Q805
Q806
Q807
R810
R811
D803
D804
C813
C814
R804
C805
C806
R807
C808
C809
C812
D802
D805
C802
C803
R802
C801
R801
Q801
R803
C807
Q803
R809
C811
R808
D801
Q802
R815
R816
R817
R818
C810
R813
R751 27K
R755 390K
SVR752 500 B
R752 3.3K
SVR751 10K B
R753 1.5K
R754 56K
R756 5.6K
R757 10K
C752 10μ/16V
C751 2.2μ/ 50V
LED761 LED760 LED759 LED758
IC 751 BA681
LED752 LED753 LED754 LED755 LED756 LED757
LED852 LED853 LED854 LED855 LED856 LED857
IC 851
LED861 LED860 LED859 LED858
S5-1
S5-2
R853
R852
SVR851
C851
R854
R856
R857
C852
R851
R855
SVR852
Q951 2SD 438E
R951 3.3K
R858 1.2K
LED 751
LED 851
D951 WZ130
C953 47μ/16V
S6-1
Fuse T2.0A
THERMAL FUSE 147℃
C951 0.01 250V
S6-2
AC 220V 50 Hz
P T
S1-1
S1-2
S2-1
S2-2
S2-3
S2-4
A
B
S3-1
S3-2
R725 270 (2w)
HEAD PHONES
(+) LEFT
(−) SPEAKER A
(+) RIGHT
(−)
(−) LEFT
(+) SPEAKER B
(−) RIGHT
(+)
C955 0.01
D953
GP-30D
D952
D954
D955
C954 0.01
C956 0.01
C957 0.01
38.6V / 31.1V
0.7V / 0.7V
37.2V / 30.7V
36.7V / 30.1V
-35.9V / -29.3V
-36.3V / -29.9V
-38.6V / -31.2V
-1.3V / -1.2V
1.2V / 1.1V
0 V / 0 V
6.1V / 6.0V
0.2V / 0.1V
12.6V / 12.0V
39.6V / 32.1V
-39.7V / -32.0V
S1-1 ~ S1-2 RELAY SW (ON position)
S2-1 ~ S2-4 SP "A" SW (A position)
S3-1 ~ S3-2 SP "B" SW (OFF position)
S5-1 ~ S5-2 RANGE SW(x 0.1 position)
S6-1 ·····power SW(ON position)
S6-2 ·····MUTING SW(OFF position)
Voltage indicated in the mode of No signal / Full power

WIRING DIAGRAM





2SA798 --- Q701 Q801

BA681 --- IC 751 , IC 851

2SA 1019 --- Q702 , Q802
2SC 2375 --- Q703 , Q803
Q704 , Q804
Q705 , Q805
2SD 438 --- Q903 , Q951

STK 0049 --- IC 701 , IC 801

2SC999 --- Q706 , Q806
2SC2320 --- Q707 , Q807
Q901 , Q902

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